

GIZA 201 AND GIZA 202: A NEW HIGH YIELDING TWO ROWED BARLEY CULTIVARS

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ABSTRACT: Giza 201 and Giza 202, new barley (*Hordeum vulgare L.*) cultivars released by Barley Research Department, Field Crops Research Institute, Agricultural Research Center, Egypt in 2021, offers barley growers a new choice for high yielding, high quality of malt and disease resistant cultivars. The pedigree of Giza 201 is: Carina/WI2291/5/Soufara-02/3/RM1508/ Por//WI2269/4/WI2197/ and for Giza 202 is; Azzaf/Msel. Six yield trials were conducted during the two successive growing seasons; 2018/2019, 2019/2020, and 6 verification yield trials through the growing season 2020/2021. Results of the preliminary yield trial at Sakha and Gemmeiza Agricultural Research Stations indicate that the new barley cultivars Giza 201 and Giza 202 out yielded the checks mean of Giza 128 and Grace at 2018/2019 growing season. The results of the advanced yield trials over the four locations (Sakha, Gemmeiza, Sids and New valley Agricultural Research Stations) in 2019/2020 season cleared that the new cultivars Giza 201 and Giza 202 out yielded the check cultivar Giza 128 and Grace over all locations. In 2018/2019 season, at Sakha location the productivity was in favor by 12.34% and 15.85% for Giza 201 and Giza 202, respectively. While at Gemmeiza location the productivity was in favor by 17.89% and 14.22% for Giza 201 and Giza 202, respectively comparing to the check cultivars mean. In 2019/2020 season, comparing with the check cultivars mean, the grain yield productivity of Giza 201 was in favor by 17.38, 10.96, 12.98 and 15.82% at Sakha, Gemmeiza, Sids and New Valley regions, respectively. Also, the new released cultivar Giza 202 surpassed the mean yield of check cultivars at Sakha, Gemmeiza, Sids and New Valley regions by 19.12%, 8.84, 10.29 and 19.55%, respectively. The results obtained from 6 on-farm trials in 2020/2021 season showed the superiority of Giza 201 and Giza 202 by 14.40 and 12.57%, respectively as average of all locations. The new released variety was resistant to common barley diseases in all seasons and most locations. Also, the two new cultivars showed suitable values for studied quality traits (protein content, grain size and malt extract yield fine dry basis %) compared to the check cultivar Giza 128. Therefore, Barley Research Department recommends the two new cultivars for their superiority in yield and quality traits to meet the needs of barley growers and industry.

Key words: Two – row barley, yield stability, malt quality, disease resistance.

INTRODUCTION

Barley (*Hordeum vulgare L.*), a major world crop ranks among the top ten crops and is the

fourth among cereals. Barley contributes significantly to the world food supply as human food, malt products, and livestock feed. However, the barley crop might be considered a relatively

underutilized with regard to its potential use as an ingredient in processed human foods. Barley that belongs to the genus *Hordeum*, could be considered, one of the most ancient crops. It is a grass belongs to the family Poaceae, tribe Triticeae. The chief taxonomic characteristic of *Hordeum* is its one Flowered spikelet. Three spikelets alternate on opposite sides at each node of the flat rachis of the spike or head. Thus, is formed a triplet of spikelet at each node i.e.; the central and the two laterals. When all three spikelets are fertile, the spike is described as six rowed. When only the central spikelet is fertile, the spike is two rowed. This latter type (2Rowed) used to be classified as *Hordeum distichum* but now is also classified as *Hordeum vulgare*.

Barley is adaptable to various climates, such as the arctic regions and deserts, but does not grow well in areas with high humidity. In Egypt, barely is one of the most important crops used in animal feed as well as human food for its nutritional value against degenerative diseases including diabetes, obesity, and colon inflammation (Kumari and Kotecha, 2015). Also, barley is the main cereal crop grown in the North West Coast, North Sinai and newly reclaimed lands. Barley Research Department of the agricultural research center, Egypt, made efforts on breeding for high-yielding cultivars tolerant to harsh conditions and poor soil fertility for the newly reclaimed lands (Noaman *et al.*, 1995 and 2006, Ahmed *et al.*, 2003, El-Sayed *et al.*, 2003 and 2011, El-Bawab *et al.*, 2011 and Amer *et al.*, 2017). Development of barley cultivars with ability to produce high yield is needed. The ability of a cultivar to produce high yield across a wide range of environments is also, very important. Finlay (1968) believed that, stability across environments and yield potential are more or less independent of each other. So that, the ideal situation would be to have a highly stable genotype with high yielding potential (Finlay and Wilkinson, 1963 and Smith 1982). Ongoing efforts must focus on subjecting promising selected materials to yield and agronomic evaluation in multiple sites, to obtain a reliable data and carry -out off-station testing for potential yield verification and demonstration in farmer's fields. The present research work was undertaken to introduce new Egyptian barley

cultivars have high yielding ability under different environmental conditions, more resistant to common barley diseases and more suitable for industry.

MATERIALS AND METHODS

Barley cultivar Giza 201 has been crossed and selected from national breeding program of Barley Research Department, Field Crops Research Institute, Agricultural Research Centre. While, Giza 202 crossed by barley breeders in ICARDA, then selection started from F₂ to F₆ generation followed by yield trials evaluation conducted in Barley Research Department. The cross name and pedigree of the new cultivars were; Carina/WI2291/5/Soufara-02/3/RM1508/Por//WI2269/4/WI2197/ and Azzaf/Msel for Giza 201 and Giza 202, respectively. Moreover, the following yield trials were carried out to test the performance of the new barley cultivars as follows:

1-Preliminary yield trials

The released cultivars Giza 201 and Giza 202 was advanced to Sakha screening nurseries in 2017/2018 season. Giza 201 and Giza 202 was tested in two preliminary yield trials conducted at Sakha and Gemmeiza Agricultural Research Stations for grain yielding ability in 2018/2019 growing season among 48 promising lines including the dominant local barley cultivar Giza 128 and Grace cultivar from El-Ahram company for malt industry. The used experimental designs in these trials were randomized complete block design (RCBD) with three replicates. The plot area was 4.2 m² including 6 rows, 3.5 m long and 20 cm apart.

2- Advanced yield trials

In 2019/2020 growing season, the new cultivars Giza 201 and Giza 202 and 25 other promising lines including two local check cultivars namely; Giza 128 and Grace were evaluated at Sakha, Gemmeiza, Sids and New Valley Agricultural Research Stations. All promising lines as well as the check cultivars were tested in large plot area experiment (2.0 m × 3.5 m = 7 m²) using broadcasting planting method

which usually used by the farmers. The statistical design was RCBD with three replications according to Steel and Torrie (1960).

3- Verification yield trials

Six on-farm trials were conducted in the farmer's fields in the old and new lands in 2020/2021 growing season including the new released cultivars Giza 201 and Giza 202 and 14 other promising lines including the two local check cultivars, Giza 128 and Grace. The area of each experimental plot was 10 m² for each genotype. All plot were harvested and grain yield was weighed and adjusted to ardab/feddan.

4. Disease severity

Disease severity score, expressed as the % coverage of leaves with rust pustules and plant reaction, to indicate the infection type were recorded according to Milo *et al.* (2016).

5. Grain Quality traits

Protein content, grain size and malt extract yield on dry basis as quality traits in malt industry were analyzed in Al-Ahram company for malt industry in cooperation with Barley Research Department.

RESULTS AND DISCUSSION

1- Preliminary barley yield trials

The results in Table 1 showed the grain yield (ard/fad) of the new released barley cultivars Giza 201 and Giza 202 and the two check cultivars in 2018/2019 growing season at Sakha and

Gemmeiza Agricultural Research Stations. The new cultivars yield significantly exceeded the yield of the two checks Giza 128 and Grace and over all mean of the checks at the two locations.

The new cultivar Giza 201 yielded about 12.34% more than the checks mean at Sakha and 17.89% at Gemmeiza Research Stations, with values of 22.17 and 23.75 ardab/faddan for Sakha and Gemmeiza, respectively. Meanwhile, Giza 202 exceeded the checks mean at Sakha and Gemmeiza by about 15.85 and 14.22%, respectively, with values of 23.09 and 22.73 ardab/faddan for Sakha and Gemmeiza, respectively.

2- Advanced barley yield trials

Grain yield data of advanced yield trials for the new barley cultivars (Giza 201 and Giza 202) in addition to the two check cultivars at Sakha, Gemmeiza, Sids and New Valley Agricultural Research Stations in 2019/2020 growing season were shown in Table 2. The new released cultivars yielded more than all tested barley cultivars at all locations. The new barley cultivars Giza 201 and Giza 202 gave more grain yield than the check cultivars Giza 128 and Grace with increases of about 17.38, 10.96, 12.98 and 15.82% over the checks mean with at Sakha, Gemmeiza, Sids and New Valley locations, respectively. Data also showed that, Giza 202 gave more grain yield than the two check cultivars with an increases of about 19.12, 8.84, 10.29 and 19.55% over the checks mean, at Sakha, Gemmeiza, Sids and New Valley, respectively.

Table (1): Grain yield (ardab/faddan.) of the preliminary yield trials for Giza 201, Giza 202 and the two check barley cultivars at Sakha and Gemmeiza Agricultural Research Stations in 2018/2019 season.

Cultivar	Location		
	Sakha	Gemmeiza	Mean
Giza 128	19.88	19.33	19.60
Grace	18.99	19.67	19.33
Giza 201	22.17	23.75	22.96
Giza 202	23.09	22.73	22.91
LSD _{0.05}	0.96	1.58	1.27
Checks mean	19.43	19.50	19.47
%Increase of Giza 201 over checks mean	12.34	17.89	15.12
%Increase of Giza 202 over checks mean	15.85	14.22	15.04

Table (2): Grain yield (ardab/ faddan.) of the advanced yield trials for Giza 201, Giza 202 and the two check barley cultivars at Sakha, Gemmeiza, Sids and New Valley Agricultural Research Stations in 2019/2020 season.

Cultivar	Location				
	Sakha	Gemmeiza	SIDS	New Valley (El-Dakhla)	Mean
Giza 128	20.08	19.42	21.62	16.23	19.34
Grace	18.33	18.75	21.83	15.25	18.54
Giza 201	23.25	21.43	24.97	18.70	22.09
Giza 202	23.75	20.93	24.22	19.57	22.12
LSD 0.05	1.11	1.3	1.29	0.78	1.12
Checks mean	19.21	19.08	21.73	15.74	18.94
% Increase of Giza 201 over checks mean	17.38	10.96	12.98	15.82	14.29
% Increase of Giza 202 over checks mean	19.12	8.84	10.29	19.55	14.45

3- Verification yield trials

The results presented in Table 3 show the average grain yield for the new barley cultivars Giza 201 and Giza 202 and two commercial barley cultivars in six on-farm yield trials grown in five governorates in 2020/2021 growing season. The obtained data confirm the results which obtained in yield trials which support the superiority of the new cultivars compared with other barley cultivars.

Results of verification barley yield trials showed that, barley cultivars Giza 201 gave more grain yield than the check cultivars Giza 128 and Grace with increase of about 11.15, 15.89, 14.75, 13.04, 15.95 and 15.99% over the checks mean, at Kafr El-Sheikh, Garbia, Bani Swif, El-Minia and New Valley (El-Dakhla) and New Valley (Al Hendaw), respectively. Data also showed that, Giza 202 exceeded the checks mean of about 7.84, 9.53, 11.21, 16.10, 14.22 and 17.16%, at Kafr El-Sheikh, Garbia, Bani Swif, El-Minia and New Valley (El-Dakhla) and New Valley (Al Hendaw), respectively.

1. Disease resistance

Table 4 showed leaf rust (LR) and net blotch(NB) diseases severity for the new barley cultivars Giza 201 and Giza 202 and the two check cultivars at Sakha and Gemmeiza

agricultural Research Stations during 2018/2019 to 2020/2021 seasons. The performance of the adult plants of Giza 201 and Giza 202 reflected good resistance to the two barley diseases (leaf rust and net blotch) under natural conditions in the open fields. These results confirmed that, the new developed barley cultivars Giza 201 and Giza 202 is tolerance to common barley disease and could be grown under all environmental conditions of barley growing areas in Egypt.

2. Grain Quality traits

Barley and malt quality parameters including grain protein content, grain size and malt extract yield on dry basis were analyzed (Table 5).

Protein Content

The results (Table 5) showed that, grains protein content was significantly different among the tested cultivars. The maximum protein content was observed in check cultivar Giza 128 (11.3%), whereas, lower values were detected in Giza 201 (9.7%) and Giza 202 (9.8%). Grain protein content of all tested varieties fall within the range of EBC standards (9% to 12%). The previous data showed that the new released cultivars more suitable for malt industry than the check cultivar (Royal Australian Chemical Institute; 2000).

Table (3): Grain yield (ardab/ faddan.) of the verification barley yield trials for Giza 201, Giza 202 and the two check barley cultivars at different locations in 2020/2021 season.

Cultivar	Location						Mean
	Kafr El-Sheikh	Garbia	Bani Swif	El-Minia	New Valley (El-Dakhla)	New Valley (Al Hendaw)	
Giza 128	19.83	18.80	20.16	18.67	16.00	16.05	18.25
Grace	21.33	19.50	19.43	17.86	16.50	17.21	18.64
Giza 201	23.17	22.77	23.22	21.00	19.33	19.79	21.55
Giza 202	22.33	21.17	22.29	21.77	18.94	20.08	21.10
LSD 0.05	0.82	1.31	0.93	1.14	1.23	1.03	1.08
Checks mean	20.58	19.15	19.79	18.26	16.25	16.63	18.44
%Increase of Giza 201 over checks mean	11.15	15.89	14.75	13.04	15.95	15.99	14.40
%Increase of Giza 202 over checks mean	7.84	9.53	11.21	16.10	14.22	17.16	12.57

Table (4): Leaf rust (LR) and net blotch (NB) diseases severity for the new barley cultivars Giza 201 and Giza 202 and the two check cultivars at Sakha and Gemmeiza agricultural Research Stations during 2018/2019 to 2020/2021 seasons.

Season	Cultivars	Sakha		Gemmeiza	
		LR	NB	LR	NB
2018/2019	Giza 128	20 S	7/2	-	5/1
	Grace	30 S	9/6	-	-
	Giza 201	5 MS	-	-	-
	Giza 202	5 MS	-	-	-
2019/2020	Giza 128	-	-	-	-
	Grace	-	-	-	3/1
	Giza 201	-	-	-	3/1
	Giza 202	-	-	-	-
2020/2021	Giza 128	-	-	-	9/2
	Grace	-	-	-	9/9
	Giza 201	-	-	-	3/2
	Giza 202	-	-	-	3/2

S=Susceptible

MS=Moderately Susceptible

Table (5): Protein content, grain size and malt extract yield fine dry basis % for new barley cultivars Giza 201 and Giza 202 and the check cultivar Giza 128.

Cultivars	Protein content	Grading > 2.5mm %	Malt extract yield fine dry basis %
Giza 128	11.30	90.20	75.70
Giza 201	9.70	98.10	82.90
Giza 202	9.80	96.40	81.10

Grain Size

Large grains are desired for malting. A barley grain sample (100g) was sieved through 2.8 mm, 2.5 mm and 2.2 mm slotted sieves and the rest is included in the feed fraction (Matthews and Collins, 1975). A larger uniform grain size is desired because it enables homogenous water uptake and modification. Data in Table 5 showed that, the percentage of grain size over 2.5mm was 98.10 for Giza 201 and 96.40 for Giza 202 compared with 90.20% for the check cultivar Giza 128. These results enhance the suitability of the two new varieties of malt industry.

Malt extract yield on dry basis (%)

Data in Table 5 showed that, the percentage of malt extract yield (%) in the new released cultivars was higher than the check cultivars. According to standard -values any base malt that doesn't give at least 78% Dry Basis Fine Grind (DBFG) extract is substandard, where the acceptable values ranged from 78-82%. According to data in table 5, Giza 201 and Giza 202 gave suitable values for malt extract yield% where the values were 82.90 for Giza 201 and 81.10% for Giza 202 compared with 75.70% for the check cultivars Giza 128.

In conclusion, Barley Research Department strongly recommend the new barley cultivars Giza 201 and Giza 202 to be grown at old and new reclaimed land, where its productivity and grain quality overcome most of the cultivated barley cultivars.

REFERENCES

- Ahmed, I.A.; El-Sayed, A.A.; Abo-El-Enin, R.A.; El-Gamal, A.S.; Noaman, M.M.; El-Sherbiny, A.M.; Asaad, F.A.; El-Hag, A.A.; Moustata, Kh.A.; El-Bawab, A.M.O.; El-Moselhy, M.A.; Megahed, M.A.; Abdel-Hamed, M.M.; Amer, Kh.A.; Attia, A.A.; Saad, M.F.; Said, M.A.; Ashmawy, H.A.; Rizk, R.A. and Mahfouz, H.A.T. (2003). Giza 2000, A new Egyptian barley variety for newly reclaimed lands and rainfed areas. *Zagazig J. Agric. Res.*, 30 (6): 2095-2112.
- Amer, Kh. A.; Abou El Enein, R.A.; El-Sayed, A.A.; Noaman, M.M.; Ahmed, I.A.; El-Moselhy, M.A.; Moustafa, Kh. A.; Abd El-Hamid, M.; Megahed, M.A.; El-Bawab, A.M.O.; Ashmawy, H.A.; Eid, A.A.; Saad, M.F.; Abbas, Sh. I.; Badawy, A.A.; El-Nady, Hanem E. A.; Ahmed, Karima R.; Ali, Heba G.; Mansour, M.; El-Shawy, E.E.; Mariey, Samah A.; Abd El-Azeem, Ashgan M.; El-Wakeel, Sally E.; Agwa, A.M.E.; El-Nagar, A.A.; El-Bosely, M.A.; Attya, A.M.; El-Akhdar, A.A.; Ahmed, A.H.; Abdel-Wahab, E.; Selim, Amaal H.; Khedr, Rania A.; Mostafa, Nabila A.; El-Rawy, A.M. and Mohamed, Amina A. (2017). Giza 137 and Giza 138, new Egyptian six-rowed barley cultivars For new land. *Egypt. J. Plant Breed.* 21 (5): 380 – 395.
- El-Bawab, A.M.O.; El-Sayed, A.A.; El-Moselhy, M.A.; Abd El-Hameed, M.M.; Amer, Kh. A.; Megahed, M.A.; Saad, M.F.; Ashmawy, H.A.; Eid, A.A.; Abo ElEnein, R.A.; El-Gamal, A.S.; Ahmed, I. A.; Noaman, M. M.; Shendy, M.Z.; Abaas, Sh. I. and Badawy, A. A. (2011). Giza 133 and Giza 134, two new barley varieties for new reclaimed areas in Egypt. *Egypt. J. Plant Breed.* (15) 2: 1-10.
- El-Sayed, A.A.; Abo El-Enein, R.A.; El-Gamal, A.S.; Megahed, M.A.; El-Moselhy, M.A.; El-Sherbiny, A. M.; El-Hag, A.A.; El-Bawab, A.M.O.; Abdel-Hamid, M.; Amer, Kh. A.; Mostafa, E.E.; Grando, S.; Ashmawy, H.A.; Abaas, Sh. I.; Shendy, M.Z.; Said, M.A. and El-Hawary, M.I. (2003). Giza 129 and Giza 130, two newly released hull-less barley varieties for irrigated lands in Egypt. *Egypt. J. Plant Breed.* 7:387-398.
- El-Sayed, A. A.; El-Bawab, A. M. O.; El-Moselhy, M. A.; Amer, K. A.; Ashmawy, H. A.; Shendy, M. Z.; Abaas, Sh. I.; Attea, A. A.; Mahmoud, M. A.; Megahed, M. A.; Badawy, A. A.; Grando, Stifania; Capettini, A. F.; Gendy, E. K.; Elkaramany, A. M.; Mostafa, E. E. and Mohamed, Amina A. (2011). Giza 136 a new high yielding and stable hull-less barley variety for irrigated areas in Egypt. *Egypt. J. Plant Breed.* (15) 2:39-50.

- Finlay, K.W. and Wilkinson, G.N. (1963). The analysis of adaptation in plant breeding programmes. *Aust. J. Agric. Res.*, 14: 742–754.
- Finlay, K.W. (1968). The significance of adaptation in wheat breeding. pp: 742–754. In : *Proc. 3rd Int. Wheat Genetics*.
- Kumari Rajesh and Kotecha Mita (2015). Physicochemical and nutritional evaluation of yava (*Hordeum vulgare* linn.). *Int. Res. J. Pharm.*, 6 (1): 70-72.
- Matthews, S. and Collins, M.T. (1975). Laboratory measures of field emergence potential in barley. *Seed Sci. Techno.* 3: 863–870.
- Milo, S.; Emil, R.; Svetlana, M.; Ivana, P. and Biljana, T. (2016). Field efficacy of different fungicide mixtures in control of net blotch on barley. *Pestic. Phytomed.* 31: 51-57.
- Noaman, M.M.; El-Sayed, A.A.; Asaad, F.A.; El-Sherbini, A.M.; El-Bawab, A.O.; El-Moselhi, M.A. and Rizk, R.A. (1995). ‘Giza 125’ and ‘Giza 126’, two new barley cultivars for rainfed areas of Egypt. *Egypt. J. Appl. Sci.* 10: 418-432.
- Noaman, M.M.; El-Sayed, A.A.; Abo El-Enein, R.A.; Ahmed, I.A.; El-Gamal, A.S.; El-Sherbiny, A.M.; Abd El-Hameed, M.M.; Megahed, M.A.; Moselhy, M.A.; El-Bawab, A.M.; Amer, Kh.A.; Saad, M.F.; Ashmawy, H.A.; Rizk, R.A. and Abdel Rawab, Y.M. (2006). Giza 132, a new drought-tolerant six-rowed barley cultivar. *Egypt. J. of Appl. Sci.* 21: 46-58.
- Royal Australian Chemical Institute. Approved methods of the RACI Cereal Chemistry Division. North Melbourne: Vic. Royal Australian Chemical Institute; 2000.
- Smith, E.L. (1982). Heat and drought tolerant wheats of the future. pp: 141–147. In: *Proc. of the National Wheat Res. Conf. USA-ARS*, Beltsville, Maryland.
- Steel, R.G.D. and Torrie, H.J. (1960). *Principles and Procedures of Statistics*. 2nd Ed. MC Graw-Hill Book Co. New York.

جيزة ٢٠١ وجيزة ٢٠٢ : صنفان جديان ذو انتاجية عالية من الشعير ثنائي الصفوف

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المخلص العربي

صنفان جديان من الشعير استنبطا من خلال قسم بحوث الشعير - معهد بحوث المحاصيل الحقلية - مركز البحوث الزراعية - مصر في عام ٢٠٢١ هما

جيزة ٢٠١ (Carina/WI2291/5/Soufara-02/3/RM1508/ Por//WI2269/4/WI2197/)

وجيزة ٢٠٢ (Azzaf/Msel). ويتميز الصنفان الجديان بالإنتاجية وصفات الجودة العالية والمقاومة للأمراض الفطرية الشائعة التي تصيب الشعير. اجريت ٦ تجارب على المحصول خلال موسمي النمو ٢٠١٨/٢٠١٩، ٢٠١٩/٢٠٢٠، و ٦ تجارب مشاهدة فى حقول المزارعين خلال موسم النمو ٢٠٢٠/٢٠٢١. تشير نتائج تجارب المحصول الأولية بمحطتي البحوث الزراعية في سخا والجميزة إلى أن صنفى الشعير الجديين جيزة ٢٠١ وجيزة ٢٠٢ قد تفوقا على صنفى المقارنة جيزة ١٢٨ وجريس في موسم النمو ٢٠١٨/٢٠١٩. أظهرت نتائج تجارب المحصول المتقدمة والتي تم تنفيذها في أربعة محطات بحثية (سخا، الجميزة، سدس، الوادي الجديد) في موسم ٢٠١٩/٢٠٢٠ أن الصنفين الجديين جيزة ٢٠١ وجيزة ٢٠٢ قد تفوقا على صنفى المقارنة جيزة ١٢٨ وجريس فى كل المواقع. في موسم ٢٠١٨/٢٠١٩ تفوق الصنف جيزة ٢٠١ وجيزة ٢٠٢ فى محطة بحوث سخا على متوسط صنفى المقارنة بنسبة ١٢,٣٤% و ١٥,٨٥% على التوالي. بينما كان التفوق فى موقع الجميزة بنسبة ١٧,٨٩% و ١٤,٢٢% لصنف جيزة ٢٠١ وجيزة ٢٠٢ على التوالي مقارنة بمتوسط صنفى المقارنة. في موسم ٢٠١٩/٢٠٢٠، مقارنة بصنفى المقارنة، تفوق الصنف جيزة ٢٠١ بنسبة ١٧,٣٨ و ١٠,٩٦ و ١٢,٩٨ و ١٥,٨٢% فى مناطق سخا والجميزة وسدس والوادي الجديد على التوالي. كما تفوق الصنف الجديد جيزة ٢٠٢ على متوسط إنتاجية صنفى المقارنة فى مناطق سخا والجميزة وسدس والوادي الجديد بنسبة ١٩,١٢% و ٨,٨٤ و ١٠,٢٩ و ١٩,٥٥% على التوالي. أظهرت النتائج التي تم الحصول عليها من التجارب الست المنزرعة في موسم ٢٠٢٠/٢٠٢١ تفوق جيزة ٢٠١ وجيزة ٢٠٢ بنسبة ١٤,٤٠ و ١٢,٥٧% على التوالي كمتوسط لجميع المواقع. كما أظهرت النتائج ان الصنفين الجديين أكثر مقاومة لأمراض الشعير الشائعة في جميع السنوات ومعظم المواقع، علاوة على تفوق الصنفان الجديان فى بعض صفات الجودة التي تم تقديرها مثل نسبة البروتين وحجم الحبوب ونسبة المولت المستخلص بالمقارنة بصنف المقارنة جيزة ١٢٨.

لذلك يوصى قسم بحوث الشعير بالصنفين الجديين لتفوقهما فى صفة المحصول وصفات الجودة بما يلبى حاجة مزارعى الشعير واحتياجات الصناعة.